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Repetitive ERTS-1 Observations of Surface Water Variability

along Rivers and other Low-lying areas

by

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The Earth Resources Technology Satellite, ERTS-1, provides an 18-day repetitive coverage capability and observations in the 0.8-1.1 μ m spectral region where the contrast between water and adjacent surfaces is relatively large. Using these capabilities, observations in Virginia, Iowa, and California have been acquired showing distinct patterns of flooding. In Virginia the area of flooding along the James River following heavy rains in early October 1972 can be observed. In Iowa, flooding along the East and West Nishnabotna Rivers in September 1972 can be seen following the deposition of as much as 21 inches of rain in three days in West Central Iowa. Repetitive views of these rivers before and after flooding have been examined. In California an area flooded because of breaks in the levees along the Sacramento River can be observed, and in later views the gradual drying of the area under flood can be seen. Sloughs along the Sacramento and San Joaquin Rivers can be seen to expand in terms of the area covered by standing water as time extends from Summer to Fall. In the Tulare Lake Bed area of California large fields subject to irrigation by flooding can be seen to respond to the spread of water across the fields and to drying with time following irrigation. Overall, the results show that observations of change in the areal extent of standing water or flooded area can be readily seen for water areas as small as one hectare. The results indicate that ERTS-1 imagery can be a valuable adjunct to conventional and aircraft survey methods for ascertaining the amount of area covered by water or affected by flooding. In addition there is evidence to suggest that the ERTS-1 data can be used to survey the amount of land subject to irrigation in agricultural regions or covered by water in wildlife refuge areas.

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